



Source: Meg Ramey

Being Smart About Micromobility

What Communities Are Doing Now for Youth Safety

In recent years, communities across the United States have experienced a rapid increase in the use of micromobility devices, particularly electric scooters (e-scooters) and electric-assist bicycles (e-bikes). These devices have become especially popular among youth, who are increasingly using them for travel to school and to participate in recreational and social activities.¹ While electric micromobility can offer convenient and affordable mobility options, it also raises safety concerns, particularly for youth, whose physical and cognitive abilities are not fully developed.

Communities are still adapting their infrastructure, regulations, safety equipment, and education programs to keep pace with the shift to electric micromobility and better integrate it into local

transportation systems. As more devices appear on roadways, sidewalks, and shared use paths, communities need ways to better support young riders and keep all road users safe.

This information brief is designed for transportation and health professionals, educators, micromobility device retailers, caregivers, and community advocates working to improve safety for youth using electric micromobility devices. It describes common risk factors for young riders aged 18 and younger, highlights key challenges communities are facing, shares examples of community approaches, and identifies actions communities can take. By prioritizing safety for youth in micromobility planning and design, communities can support mobility, independence, and physical activity while reducing the risk of injury.

What is Micromobility?

Micromobility refers to a category of small, low-speed transportation modes that are either human or electric-powered, such as bicycles, electric-assist bicycles (e-bikes), scooters, and other small, wheeled modes.²

Within the range of electric micromobility devices, however, there is important variation in power, speed, and regulatory classification. As electric micromobility device options continue to expand, it is important for riders and caregivers to understand the key differences between these devices, as they influence who can use them, where they can operate, and what safety considerations apply.

To help clarify these distinctions, **Table 1** compares commonly used low-speed devices such as e-bikes and e-scooters with higher-powered vehicles such as electric motorcycles (often referred to as “e-motos”). While e-motos may look like e-bikes, their higher speeds and power levels subject them to motor vehicle regulations, including licensing requirements and minimum rider age of 16, and therefore place them outside the scope of this brief. Many caregivers may not understand the differences between these micromobility devices and may select a device that is not appropriate for their child’s age and readiness.

Table 1: Common micromobility devices.^{3,4} Images: Pedestrian and Bicycle Information Center⁵

Device	E-Bikes (Class 1, 2, 3)	E-Scooters and Other Low-Speed Devices ⁱ	E-Motos
Operable Pedals	Required	Not required	Not required (often inoperable)
Top Speed	Class 1: pedal assist only, maximum assisted speed of 20 mph Class 2: throttle control and pedal assist, maximum assisted speed of 20 mph Class 3: pedal assist only, maximum assisted speed of 28 mph	Most are 20 mph or less though some can go up to 30 mph Local regulations may reduce top speeds for scooter share systems	Varies by device, some can travel up to 60 mph
Throttle	Class 2 only (< 20 mph)	Usually throttle-only	Usually throttle-only
Licensing/ Registration	Generally not required (Some States, such as New Jersey require a license for all e-bikes, and some States such as Hawaii, require e-bike registration)	Not required	Definitions vary by state, as do registration requirements

Why Micromobility Matters

The rapid growth in the availability and use of e-bikes and e-scooters is changing how people travel by offering new ways to access daily destinations. For young people, access to these devices can complement or replace trips that would otherwise be made by walking, bicycling, transit, private vehicle, or not made at all due to long distances or limited access to transit or caregivers.¹ The following sections highlight key reasons why micromobility matters, particularly for youth.

Provides Affordable Mobility Options

Shared and personal electric micromobility devices can make short trips more affordable, particularly for youth and families who may not have access to a car or a driver's license. Compared to the costs of car ownership, including fuel, insurance, maintenance, and parking, micromobility offers a lower-cost alternative for everyday travel.

Expands Autonomy and Access to Opportunities

Micromobility can increase independence for young people by extending their travel range beyond what is possible on foot or with a conventional bicycle. It also improves access to destinations that are not served by transit. Devices can enable youth to reach school, after-school programs, jobs, social activities, and errands without relying on caregivers. This increased mobility can support participation in educational and enrichment opportunities and foster confidence and decision-making skills as youth learn to navigate their communities. For some youth with limited stamina, temporary injuries, or difficulty traveling long distances, electric micromobility may also help them keep pace with friends. For people with some types of disabilities, seated and three-wheeled devices expand mobility options.

Supports Trip-Chaining and Daily Flexibility

Electric micromobility makes it easier to link multiple destinations into a single trip without returning home or relying on a car. For youth, this can mean traveling from school to a job, then to sports practice or a friend's house. This added flexibility is especially valuable in communities where transit service is infrequent, does not exist,



Source: Toole Design

or does not align with after-school programs, work schedules, or extracurricular schedules.

Offers Fun

Part of micromobility's appeal is that it is enjoyable. Riding outdoors, traveling independently or with friends, and developing new skills all make e-bikes and e-scooters especially attractive to young people.

Special Considerations for Youth

As micromobility devices become more widely used, young riders warrant focused attention. Children and adolescents have differing cognitive and physical abilities that can affect hazard recognition, judgment, decision-making, and vehicle control. These factors can make them more susceptible to mistakes and more vulnerable to crashes, and these risks are compounded by the high-speed capabilities of e-bikes and e-scooters. The considerations below summarize why youth-specific strategies are important for improving micromobility safety.

Developmental Considerations

Children's abilities vary widely by age and stage of development. The typical abilities of children at ages 9, 11, and 15 are quite different.⁶ For example, while physical strength and coordination generally improve with age, risk-taking behavior can increase during adolescent years. The Consumer Product Safety Commission (CPSC), which regulates e-bikes as consumer products, does not recommend e-bikes for children younger than age 9 and recommends limiting use of motorized, wheeled vehicles to those that do not exceed 10 mph for children ages 9 to 12.⁷



Source: Paloma Ayala

Physical Capability and Control Challenges

E-bikes and e-scooters are faster and heavier than conventional bicycles and scooters. Maneuvering them requires balance and physical control that develops with practice. Young riders may have more difficulty handling sudden maneuvers, uneven terrain, or braking at higher speeds.⁸

Cognitive and Judgement Limitations

Children are still developing skills such as risk assessment, hazard recognition, and traffic judgment. These skills are essential for safely navigating shared streets and mixed traffic. Young riders have less experience interacting with roadway conditions and are more prone to risky behaviors, such as distraction or lack of awareness of traffic rules, which can increase crash risk.⁹

Need for Supportive Infrastructure

In many communities, gaps in connected active transportation routes increase risk for young micromobility users. Children do not have the same experience or perspective as someone who drives a motor vehicle and are not always familiar with rules of the road, such as yielding to pedestrians. Without a separate space, young riders must share roads with fast-moving motor vehicles or on sidewalks alongside pedestrians, both of which increase the likelihood of crashes and injuries.¹⁰ In fragmented networks, youth are forced to navigate changing conditions that may involve sharing space with

fast-moving motor vehicles. Navigating changing conditions requires quick decision-making skills, such as determining whether to ride through a parking lot, on a sidewalk, through a grass field, or in the bike lane. Younger children may struggle to prioritize the options.

Current Safety Trends

Youth are being injured and killed while riding micromobility devices. The National Electronic Injury Surveillance System (NEISS), operated by the CPSC, is responsible for collecting data on consumer product-related injuries treated in U.S. emergency departments. While not all people with injuries visit emergency departments, NEISS data offer a valuable opportunity to understand micromobility injury patterns for youth.

The CPSC conducted an analysis of emergency department visits for micromobility-related injuries from 2017 to 2023, which showed that youth under age 15 accounted for a disproportionately high share of injuries. This age group represented 34 percent of those injured, while making up 18 percent of the U.S. population. Among the 373 micromobility-related fatalities reported, 19 (5 percent) involved children younger than 15 years of age. Of those 19 fatalities, 8 (42 percent) involved hoverboards (at least four of which were fire related), seven (37 percent) involved e-scooters, and four (21 percent) involved e-bikes.⁹ Motor

vehicle crashes were the leading cause of death among e-scooter and e-bike riders of all ages, but no specific proportion was presented by age group. Because the number of children using micromobility devices is unknown, injury rates across devices cannot be determined. However, other analyses provide additional insights.

E-Bike Injuries

A separate analysis of NEISS data involving children ages two to 18 between 2011 and 2020 highlighted that while injuries involving conventional bicycles remained the same over time, e-bike injuries increased. Ten to 13-year-olds accounted for the largest share of e-bike injuries (approximately 44 percent).¹¹

An analysis of NEISS data involving children ages 18 and younger between 2019 and 2023 found 15,121 emergency department visits related to e-bike injuries. Injuries rose dramatically, increasing from about four percent of the 15,121 visits occurring in 2019 to about 50 percent in 2023.¹² While growth in ridership over the time period likely explains the rising proportion of visits, the increase indicates the urgency of the problem.

A study analyzing NEISS data on e-bike injuries from 2013 to 2022 by age group found that head and face injuries were more common among 14- to 18-year-olds than any other age group. Among age groups zero-10, 11-13 and 14-18, the oldest age group experienced a much larger proportion of injuries from motor vehicle crashes (34 percent) compared to the younger age groups (approximately 12 percent for 0–10-year-olds and 11 percent for 11- to 13-year-olds).¹³

E-Scooter Injuries

Looking specifically at e-scooter injuries, an analysis of NEISS data involving children ages 18 and younger between 2020 and 2024 quantified 2,117 emergency department visits. The greatest share of injuries (approximately 38 percent) was among 11- to 14-year-olds, followed by 6- to 10-year-olds and 15- to 18-year-olds, that each accounted for approximately 27 percent of injuries, with the remainder (approximately 7 percent) among 0- to 5-year-olds.¹⁴

Self-Balancing Scooter Injuries

An analysis of NEISS data on self balanced scooter (commonly called hoverboard) injuries from 2015 to 2022 identified 4,718 cases, with a mean patient age of approximately 15 years. The analysis noted a decrease in the number of injuries between 2020 and 2022.¹⁵

Key Existing Issues

As the use of e-bikes and e-scooters continues to expand, a consistent set of challenges has emerged across communities. While many jurisdictions have established baseline rules for micromobility devices, implementation and public understanding often vary. The issues outlined below reflect recurring themes identified through a review of community practices, highlighting areas where clearer guidance, greater awareness, and targeted policy responses can support safer integration of micromobility into community transportation systems.

Regulatory and Policy Challenges

1. Inconsistent and evolving regulations:

Laws governing e-bikes and e-scooters vary significantly across States and municipalities, creating confusion for riders and complicating



Source: Toole Design

enforcement. Regulations differ in how devices are classified, where they can operate (e.g., sidewalks, bike lanes, or roadways), and what requirements apply, such as helmet use, age restrictions, and equipment standards.

2. **Device misclassification and modification:** Some devices are mislabeled by sellers or modified post purchase to exceed legal speed thresholds, blurring distinctions between e-bikes and e-motos. E-bikes and e-motos follow different laws, including the requirement for e-moto drivers to possess a driver's license.
3. **Data limitations:** Many jurisdictions lack reliable data on crashes, injuries, exposure, and enforcement related to micromobility use among young riders, limiting the ability to understand crash trends and develop evidence-based policies.
4. **Limited youth-specific policies:** Few communities have developed age-based operational requirements, minimum rider ages, or youth-targeted safety programs tailored to developmental capabilities.

Infrastructure Gaps

Even where education and awareness are strong, the built environment must support desired behaviors. Gaps in infrastructure may include:

1. **Inadequate facility design to support safe micromobility use:** The differing speeds and sizes of micromobility devices can make them

difficult to accommodate within current design standards. Guidance is needed on design standards for micromobility devices that can reduce conflicts, such as wider paths and refuge islands.

2. **Lack of connected, protected networks:** Incomplete or unprotected bikeway networks force riders into mixed-traffic conditions or onto sidewalks, increasing conflicts with vehicles and pedestrians. For young riders, these conditions can be especially challenging because they are still developing the cognitive, perceptual, and motor skills needed to judge traffic gaps, anticipate driver behavior, and maintain a consistent riding line. Differences in speed and comfort levels between e-bike riders and conventional bicyclists may also create tension within bike facilities.
3. **Limited secure parking and charging infrastructure:** A lack of secure storage and charging options can lead to informal parking, sidewalk obstruction, and theft concerns.

Education and Awareness Gaps

While information alone does not guarantee behavior change, some families might make different decisions if equipped with a more complete set of facts. In addition to providing information and increasing awareness, safety education should also include opportunities to practice riding skills and safe roadway behaviors.

1. **Confusion about device types and classifications:** Riders, caregivers, and law enforcement officers often lack clarity about the differences between Class 1, 2, and 3 e-bikes, as well as throttle and pedal-assist functions.
2. **Uncertainty about permitted riding locations:** Limited understanding of where e-bikes and e-scooters can legally operate, such as on sidewalks, bike lanes, trails, or roadways, can contribute to unsafe or inconsistent riding behavior.
3. **Limited awareness of device capabilities:** Many riders, including youth and caregivers, may underestimate the speed, acceleration, and stopping distance of powered devices compared



Source: Toole Design

to conventional bicycles. Because e-bikes can travel at higher speeds, they require helmets that are in line with motorcycles or e-scooters.^{8, 16}

4. **Lack of structured safety education:**

Few jurisdictions require or offer formal training prior to use, and young riders often begin operating higher-speed devices without foundational traffic safety knowledge, such as driver education and rules of the road.

Youth Micromobility Safety Strategies

Communities across the country are attempting to address e-bike and e-scooter safety concerns. Youth-focused efforts to support safer micromobility use are still emerging, and many of these approaches are only beginning to be tested. This section highlights examples of implementation practices. Because these efforts are relatively new, they offer useful early insights, but their effects on injury reduction have not yet been established.

Policy and Regulatory Approaches

In many places across the country, the rapid growth of e-bike and e-scooter use has outpaced existing regulatory frameworks. In response, State and local governments are reexamining current statutes and exploring new safety measures to address emerging micromobility risks. The community practices below highlight examples of actions taken at the local and institutional level to promote safer use, even as statewide policies continue to evolve.

Adoption of E-Bike Safety Regulations - Marin County, California

In California, Assembly Bill 1778 authorized a pilot program in Marin County that allows local authorities to implement tailored e-bike safety regulations within their jurisdictions. Under this bill, Marin County launched a local e-bike safety pilot focused on Class 2 (throttle-assisted) e-bikes. Using authority granted by the State, the County established a minimum age of 16 for operating Class 2 e-bikes and required helmet use for all riders, regardless of age. The ordinance includes a phased enforcement approach, beginning with a public education campaign and warning period before citations are issued, along with fines and the option to complete a safety course.¹⁷ The pilot also requires data

collection on stops, citations, and crashes to evaluate safety outcomes through 2028. Marin County's approach illustrates how State legislation can set a framework while allowing local jurisdictions to tailor age, helmet, and enforcement policies to address community-specific safety concerns.

School Permit Pilot Program - Santa Cruz, California

In fall 2026, the City of Santa Cruz will pilot a school-based e-bike permit program as part of a broader effort to address a lack of oversight regarding rider speed and road safety for e-bike users. Under the pilot program, middle school students must complete a safety course, including in-person instruction and on-bike training before receiving a permit sticker that allows them to park their e-bikes on school campuses. The program is being piloted at two middle schools and is intended to help young riders understand basic traffic rules, safe riding practices, and responsible use of e-bikes before regularly riding to school. City officials view the program as a proactive education strategy that supports youth access to e-bikes while addressing concerns about speed, safety, and limited training among younger riders.¹⁸

Infrastructure Changes

Because modifications to the built environment typically take longer to implement than educational efforts or policy changes, community concerns about micromobility may not yet be reflected in infrastructure updates. Still, the examples below illustrate how low-cost, rapid interventions are being explored to address urgent safety issues.

Designated E-Scooter Parking - Seattle, Washington

Seattle Public Schools has introduced a designated shared e-scooter parking zone at one of its high schools. Working with the city and a shared e-scooter company, the district established the area as an official parking location within the scooter app and restricted riding in other parts of the campus. The local Safe Routes to School (SRTS) program now plans to involve students in creating artwork for the space, both to boost student ownership of the parking area and to provide an entry point for broader micromobility safety education (B. Nelson, personal communication, May 5, 2026).

Safe Routes to School Bike Rack Grants - Massachusetts

The MA SRTS Program has been responsive to the growing use of micromobility among students. One example is the MA SRTS Bike Rack Grant, which provides schools with colorful bike racks along with safety essentials such as helmets, lights, and locks. Through this grant, the program has seen increasing levels of cycling on school campuses, including a mix of conventional bicycles, e-bikes, and scooters. (J. Crocker, personal communication, May 13, 2026).

Education and Awareness Approaches

With the increasing popularity of e-bikes and e-scooters among youth, many communities are expanding education and outreach efforts aimed at young riders and their caregivers. Schools, local agencies, and bikeshare providers are introducing programs that focus on building skills, increasing awareness, and promoting responsible use of micromobility devices. The community practices below highlight a range of approaches centered on youth education, training, and peer engagement to support safer riding behaviors among young riders.



Source: Brooke Nelson

Youth Skill Development

League of American Bicyclists E-Bike Smart Curriculum

Recognizing the rapid growth of e-bikes, the League of American Bicyclists developed **E-Bike Smart**, a free online educational curriculum that provides a foundation for safe ownership and operation of e-bikes. The curriculum builds on established bike safety training by including topics such as understanding the three-class e-bike system, battery safety, equipment checks, trail etiquette



Source: Judy Crocker

and collision avoidance. Upon completing the online course, participants are encouraged to continue learning through an in-person on-bike class with a certified League Cycling Instructor to develop bicycle handling skills, signaling, and other practical riding techniques.¹⁹

E-Bikers Club Youth Safety Campaign, Marin County, California

Based on 2023 Marin County Public Health data, the e-bike crash rate among youth ages 10 to 15 was five times higher than for other age groups in the county.²⁰ In response to alarming crash rates among young riders, Marin County established a Special Committee on Youth E-Bike Safety which, in coordination with the Transportation Authority of Marin, launched a countywide **E-Bikers Club** youth safety campaign in May 2025. The countywide campaign is designed to promote safe riding habits and communicate

Marin's new e-bike safety laws to all residents, with a particular focus on teens and parents.²¹ This campaign also satisfies AB 1778's requirement that every jurisdiction should run a 30-day public information campaign before its new ordinance takes effect.²²

A range of campaign materials were developed including a teen-friendly, animated video that explains Marin's e-bike rules and key safety tips, posters that use engaging artwork to explain e-bike laws, safe riding practices and the importance of wearing a helmet, stickers and hats that build awareness and pride being a safe e-bike rider, and a dedicated website that keeps traffic laws up to date and includes a safety pledge along with an FAQ for parents and riders of all ages.²³

BIKETOWN Youth Ambassadors - Portland, Oregon

Portland's **BIKETOWN Youth Ambassador program** demonstrates the power of peer engagement in promoting micromobility safety. The program trains high school students to serve as ambassadors who model safe riding behaviors and lead outreach activities within their schools to promote shared micromobility use among peers.

Youth ambassadors host in-class presentations about e-bike safety and how to use the bikeshare system. They also coordinate with City staff to help

organize test-ride sessions with students and serve as the point of contact to share information about the e-bike share program with peers. The program illustrates how youth leadership can strengthen safety culture and encourage responsible shared micromobility use within school communities.²⁴

Caregiver Education

E-Bike Resources - Marin County, California

Marin Safe Routes to School provides **E-Bike Resources** to help caregivers assess whether their child is ready for an e-bike and understand the laws before they ride. These resources include a bilingual flyer on how parents can gauge their child's cycling capabilities, as well as an overview of e-bike classes and applicable laws, an informational video explaining how e-motos are often mislabeled as e-bikes and what parents should know before buying a bike and a FAQ section focused on Class 2 throttle e-bikes. A Parent-Student E-Bike Safety Contract is also available to help families establish expectations for safe riding, compliance with traffic laws, responsible behavior, and accountability.⁵⁴

Florida Department of Transportation "What Parents Should Know" Resources - Florida

The Florida Department of Transportation (FDOT) developed parent-focused resources to address the



Source: Portland.gov

growing popularity of e-bikes and e-scooters among youth. The **E-Bike Safety Resources: What Parents Should Know** materials clarify State laws, outline where devices may legally operate and reinforce the importance of helmet use and practices that increase rider visibility.

The guidance encourages parents to set clear rules about speed, passenger restrictions, and route choices, and to model safe behavior. By framing micromobility safety as a shared responsibility, FDOT's approach reinforces that informed supervision and clear expectations are essential to supporting safer riding.²⁶

Potential Next Steps for Communities

Micromobility use among youth has increased rapidly in many communities. While these devices can expand access to schools, jobs, and recreation, they also introduce new safety considerations. Young riders are still developing the cognitive and motor skills needed for balance, hazard recognition, and decision-making, which can increase their vulnerability in complex traffic environments. At the same time, many communities lack connected, protected infrastructure and clear guidance specific to youth micromobility use.

As use continues to grow, communities have an opportunity and responsibility to address these gaps. Integrating micromobility considerations into SRTS programs and broader transportation planning efforts can help reduce risk, support skill development, and create safer travel environments for youth and all road users.

The following actions align with the safety trends identified in the brief. Some of the actions, such as providing resources and training, may be most relevant to parents, community based partners, SRTS programs, and school communities. Others, such as updating policies and providing dedicated protected infrastructure, may be tailored to local agencies and elected officials.

■ **Update policies and program guidance**

Review local policies for walking and biking to school, school district rules, and municipal codes to clarify expectations for e-bike and e-scooter use, parking, and battery charging.

■ **Request dedicated, protected infrastructure**

Support the development of connected, separated bikeway networks especially along routes to schools and other youth-serving destinations, to reduce conflicts with vehicles and pedestrians.

■ **Provide e-bike-specific resources and training**

Incorporate micromobility safety into SRTS programming, including skills training, safe riding behavior, and battery safety.

■ **Coordinate across partners**

Work with schools, transportation agencies, public health departments, and community organizations to align messaging and implementation efforts.

■ **Evaluate programs and outcomes**

Identify opportunities to collect data and evaluate micromobility programs, including youth travel behavior, safety outcomes, and infrastructure effectiveness, to inform future policy and program improvements.

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